Supplementary Material

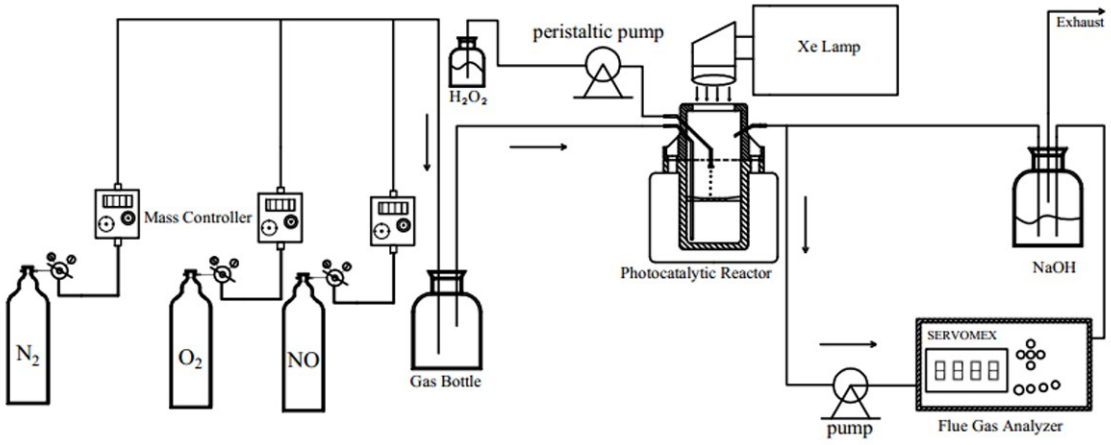

Fig. S1 Schematic diagram of experimental apparatus for the PCO of NO.

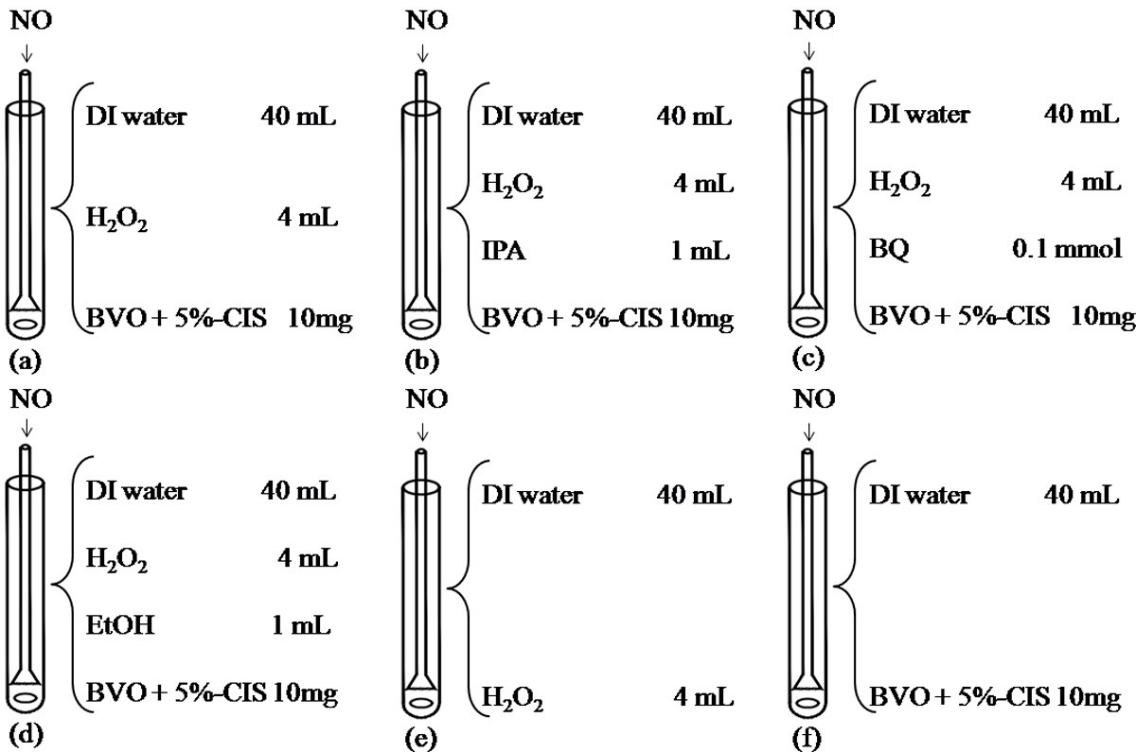

Fig. S2 Schematic diagram of experimental groups (a-d) and the control group (e-f) in the trapping experiment.

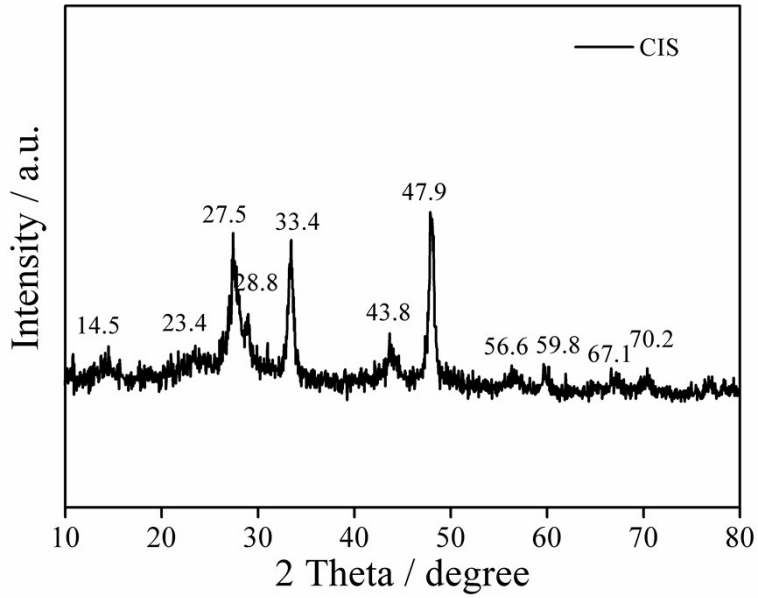

Fig. S3 XRD of as-prepared pure CIS.

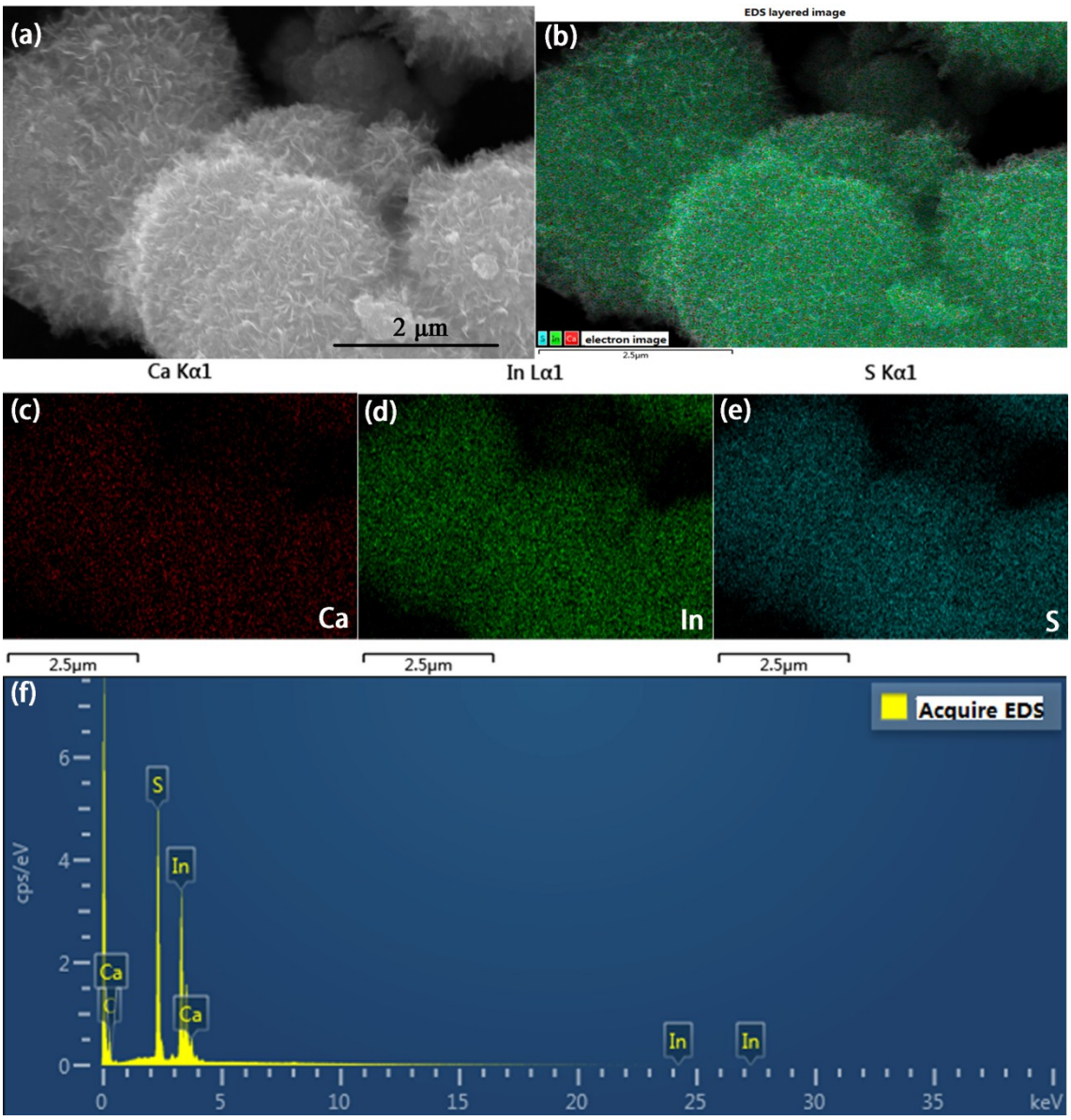

Fig. S4 SEM images of as-prepared CIS (a) along with EDS layered image (b), Ca (c), In (d), S (e) EDS mapping; EDS spectrum extracted from the map data (k).

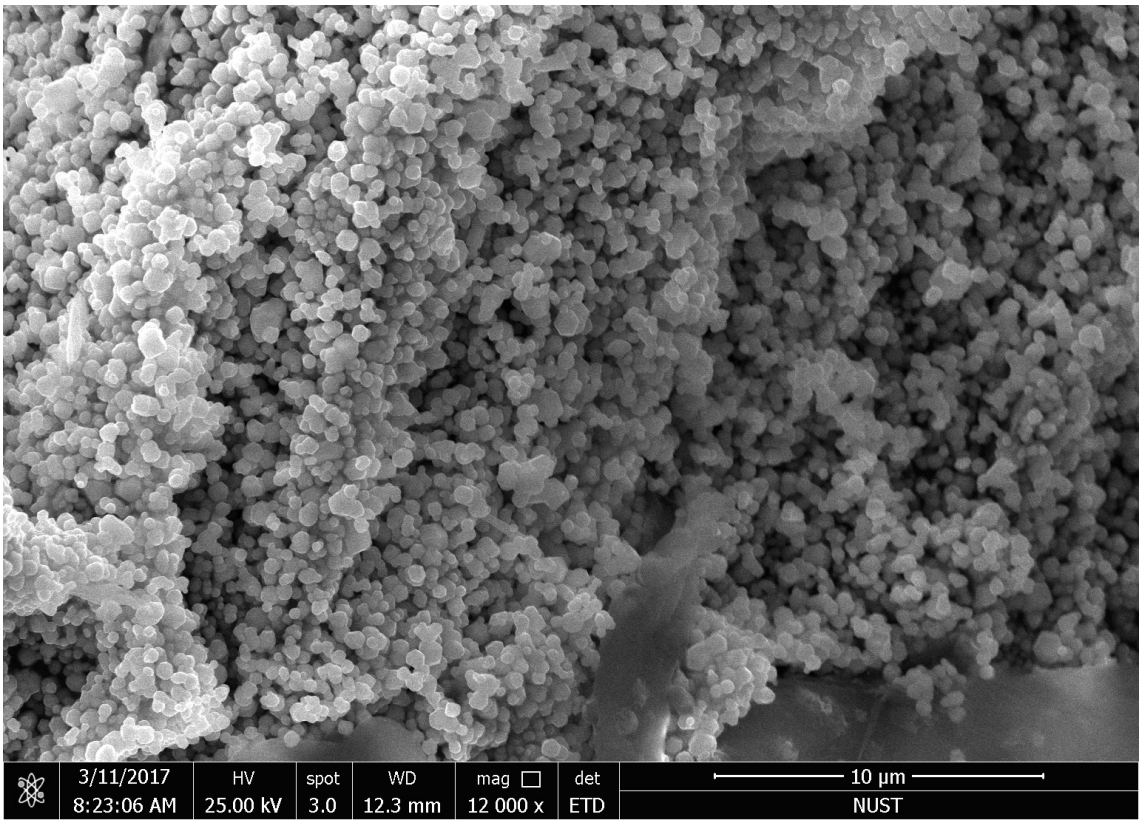

Fig. S5 SEM images of as-prepared APO.

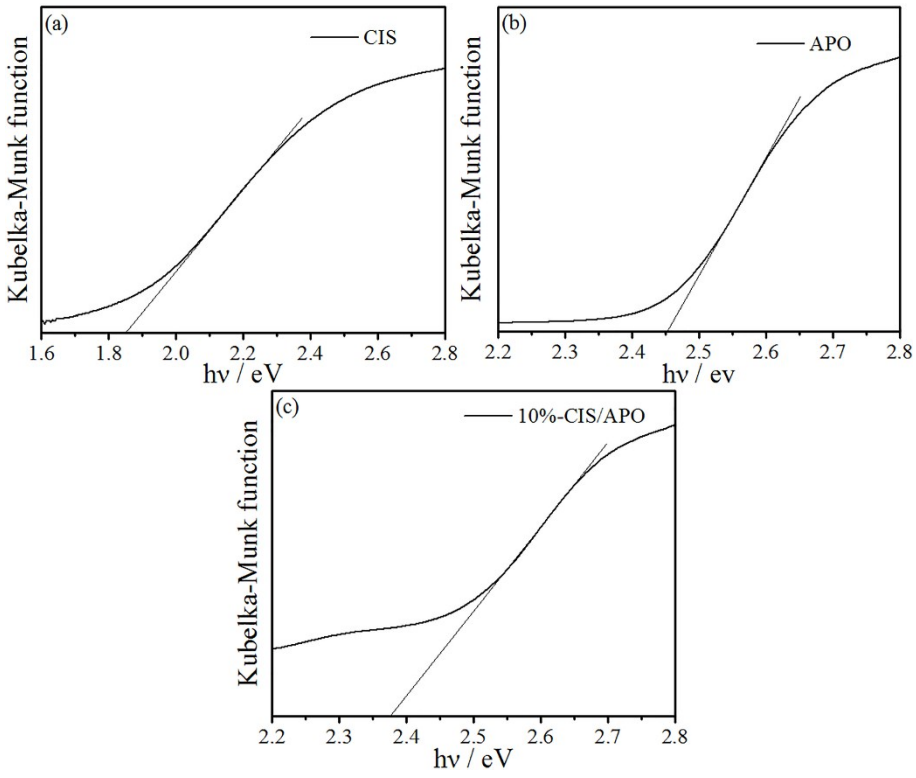

Fig. S6 The derived plots of transformed Kubelka–Munk function of as-prepared CIS (a), APO (b), 10%-CIS/APO (c).

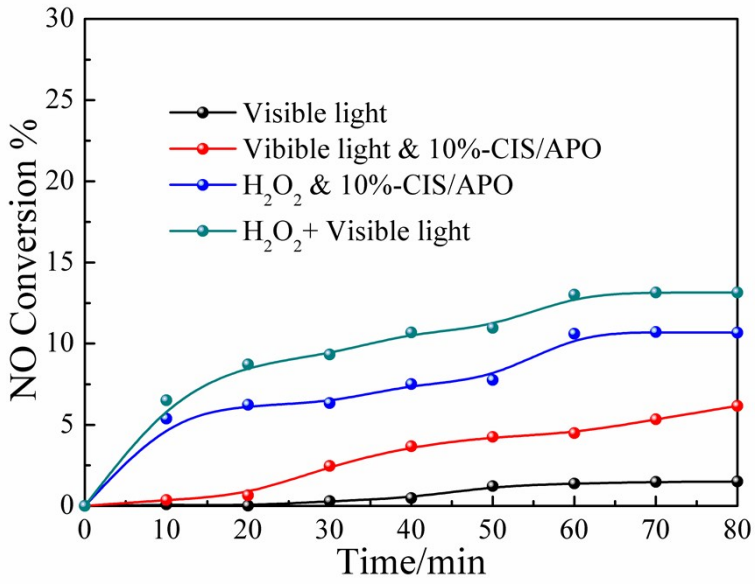

Fig. S7 Variations of NO conversion efficiency with irradiation time for preliminary experiments with the absence of the 10%-CIS/APO, visible-light irradiation, H_2O_2 solution, both 10%-CIS/APO and H_2O_2 solution, respectively.

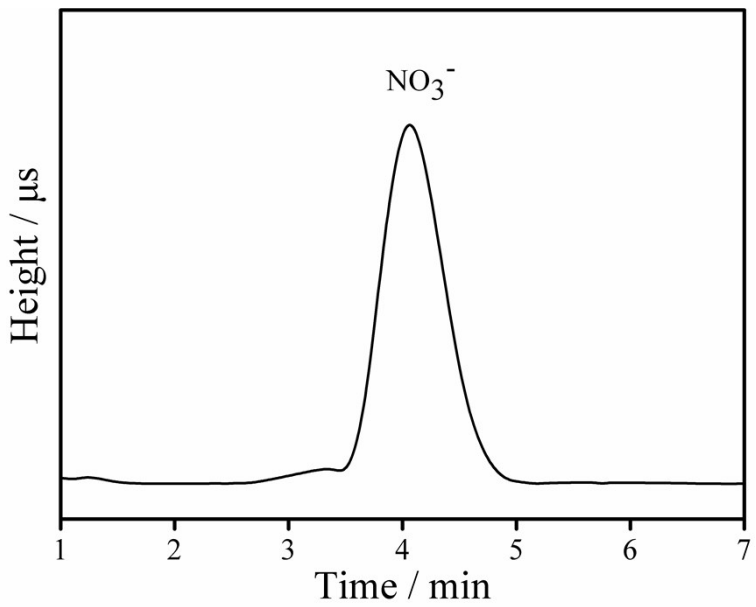

Fig. S8 Ion Chromatography analysis of ions in the solution after reaction in the presence of 10%-CIS/APO composite.

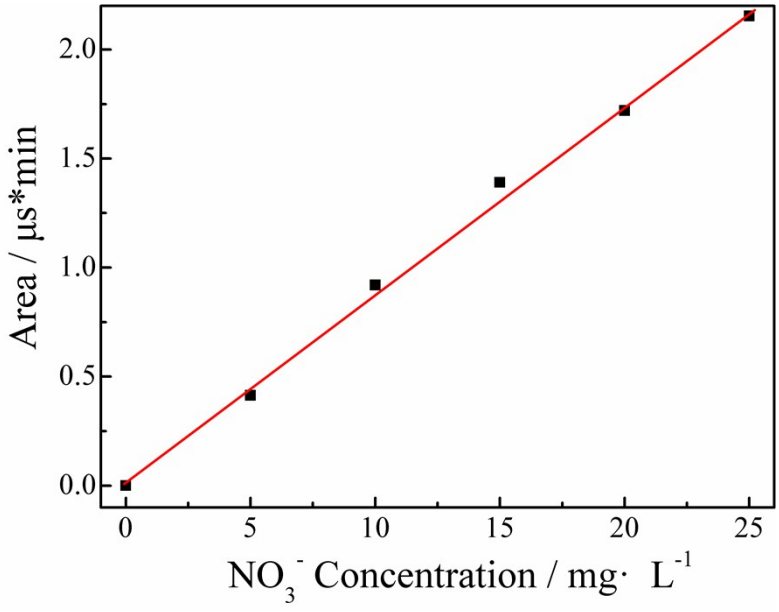

Fig. S9 The fitting line obtained by standard solutions using Ion Chromatography.

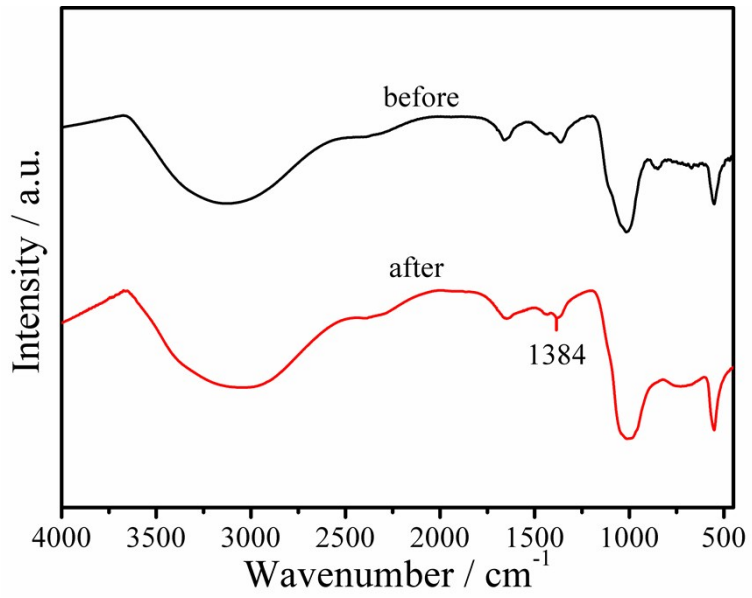

Fig. S10 FTIR spectra of 10%-CIS/APO before and after PCO of NO reaction.

Material balancing calculation of N element

To investigate possible byproducts, the nitrogen balancing calculation is performed. The actual molar value of NO_3^- and the estimated molar value of NO could be calculated by Eq. (1) and Eq. (2) based on the material balance of N element from NO:

$$n(NO_3^-)_{act} = \frac{C(NO_3^-)\,V_L}{M_{NO_3}} \quad (1)$$

$$n(NO_x^-)_{est} = \frac{C_{in}\,\eta\,Q\,t}{22.4} \times \frac{T_0}{T} \quad (2)$$

where $n(NO_3^-)_{act}$ is the actual molar value of NO_3^- and $n(NO_x^-)_{est}$ is the estimated molar value of NO; $c(NO_3^-)$ is the actual concentration of NO_3^- in the solution; V_L represents the volume of solution (8 mL); M_{NO3-} is the molar mass of NO_3^-, C_{in} and η refer to inlet concentration of NO (400 ppm) and conversion rate of NO, respectively; Q is the gas flow (100 mL·min^{-1}); t is the reaction time (80 min); T_0 is zero centigrade (273 K), while T is environmental temperature (298 K). Take 10%-CIS/APO composite photocatalyst for an instance, $n(NO_3^-)_{act}$ is 0.100 mmol and $n(NO_x^-)_{est}$ is 0.112 mmol. Based on the above calculation result, it can be seen that the estimated value and actual value of N element are in an order of magnitude. Also, the relative error between them is small. Therefore, the N element of NO which participated in the reaction was almost transferred into that of produced NO_3^-.